

REMARKS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-4 and 6-18 are presently active in this case, Claim 1 having been amended and Claims 6-18 having been added by way of the present Amendment.

In the outstanding Official Action, Claims 1-3 were rejected under 35 U.S.C. 102(e) as being anticipated by Gross et al. (U.S. Patent No. 6,547,849). Claim 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over Gross et al. in view of Baum (U.S. Patent No. 4,140,170). For the reasons discussed below, the Applicants request the withdrawal of the art rejections.

In the Office Action, the Gross et al. reference is indicated as anticipating Claim 1. However, the Applicants note that a claim is anticipated only if each and every element as set forth in the claims is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). As will be demonstrated below, the Gross et al. reference clearly does not meet each and every limitation of the independent Claim 1.

Claim 1 of the present application recites a casting apparatus comprising a die which has an opening section above the die so as to pour a molten metal therefrom, a plate-shaped heater disposed above the die horizontally, a gas supplying section which supplies an inert gas to a surface of the molten metal, a lid which is disposed horizontally between the surface of the molten metal and the heater, and a lid moving structure which moves the lid relatively

to the die and controls an opening amount of the opening section above the die. The heater is recited as being plate-shaped. The Applicants submit that the Gross et al. reference fails to disclose all of the limitations recited in Claim 1 of the present application.

The Gross et al. reference describes a steel charge and slag forming material that is heated and refined in a ladle (17) using a ladle metallurgical furnace (10) to form a molten steel bath covered by slag. The steel charge or bath is heated within the ladle (17) by a vertically oriented electrode (38), which is supported by a conducting arm (36) and an electrode column (39). In operation, as column (39) lowers, electrode (38) is lowered through an aperture in the furnace hood or exhaust (34) and an aperture in the furnace lid (32) into the ladle (17) and beneath the slag in order to heat the metal within the ladle (17).

Claim 1 of the present application recites a plate-shaped heater disposed above the die horizontally, and a lid which is disposed horizontally between the surface of the molten metal and the heater. Such a configuration is not disclosed or suggested by the Gross et al. reference. As noted above, the Gross et al. reference describes and depicts a rod-shaped electrode (38). The electrode (38) is clearly not plate-shaped, as is the heater recited in Claim 1 of the present application. Accordingly, the Gross et al. reference does not disclose all of the limitations recited in amended Claim 1.

The difference in structure between the rod-shaped electrode (38) of the Gross et al. reference and the plate-shaped heater of present invention is based upon the structural differences between these two apparatuses. In the Gross et al. reference the rod-shaped electrode (38) is lowered through an aperture in the furnace lid (32) into the ladle (17) and

beneath the slag in order to heat the metal within the ladle (17). To the contrary, no such insertion of the heater of the present invention through an aperture is necessary.

Since the Gross et al. reference does not disclose all of the limitations recited in Claim 1, the Applicants respectfully request the withdrawal of the anticipation rejection of Claim 1.

Claims 2-4 are considered allowable for the reasons advanced for Claim 1 from which they depend. These claims are further considered allowable as they recite other features of the invention that are neither disclosed nor suggested by the applied references when those features are considered within the context of Claim 1.

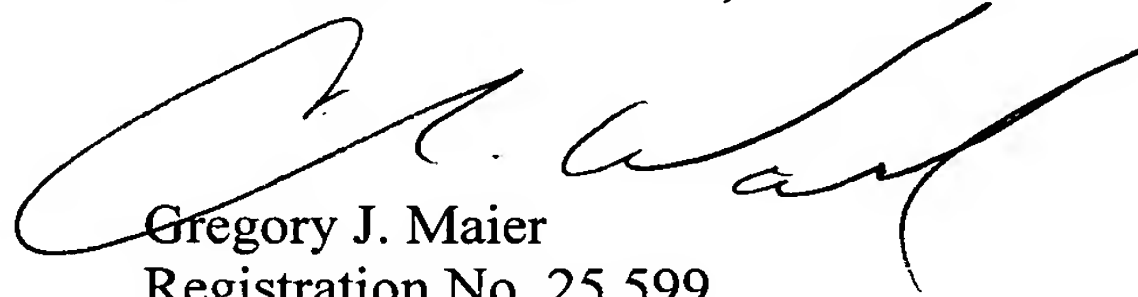
Newly added Claims 6-18 are considered allowable as they recite features of the invention that are neither disclosed nor suggested by the references of record. The references of record do not disclose means for adjusting an opening amount of an opening section according to a flow amount of the inert gas to the surface of the molten metal, as recited in new independent Claim 9. Additionally, the references of record do not disclose an additional heater disposed below the die, as recited in new Claim 18. No new matter has been entered. By way of illustration and not limitation, support for the new Claim 6 can be found in the figures, support for new Claims 7 and 16 can be found in Figures 7-8C, support for new Claims 8, 17, and 18 can be found in Figure 1, support for new Claims 9-12 can be found on page 3, lines 5-7, and page 8, lines 17-23, support for new Claim 13 can be found in Figures 1-3B, support for new Claim 14 can be found in Figure 5, and support for new Claim 15 can be found in Figures 6A-8C.

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Consequently, in view of the above discussion, it is respectfully submitted that the present application is in condition for formal allowance and an early and favorable reconsideration of this application is therefore requested.

Respectfully Submitted,

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